Summary: Michigan Department of Agriculture Groundwater Monitoring Program Ag Expo 2006

The Michigan Department of Agriculture (MDA) and the Michigan Groundwater Stewardship Program sponsored a domestic well water sample screening at the 2006 Michigan State University Agricultural Exposition (Ag Expo). MDA laboratory staff screened 1,600 samples for atrazine, nitrate, and nitrite. This was a decrease of 606 samples below Ag Expo 2005. This year's screening ranks fourth in the number of samples submitted. Samples were submitted with a short questionnaire about well characteristics and land use. There were 22 counties that showed a decrease of 10 or more samples at the screening. Manistee County sent approximately 200 fewer samples to the screening compared to Ag Expo 2005. Branch, Clare, Lake, Leelanau, and Montmorency Counties sent about 75 fewer samples. There were 11 counties that showed an increase of 10 or more samples at the screening. Benzie, Grand Traverse, Kalkaska, Missaukee and Saint Joseph Counties sent approximately 50 more samples. Kent sent 75 more samples, compared to Ag Expo 2005.

Samples were tested for the presence of the triazine herbicide atrazine using ELISA (enzyme-linked immunosorbent assay) methods. The ELISA kits used also react in varying degrees to other triazines, including simazine and prometon, and some triazine breakdown products.

Samples were screened for nitrate and nitrite using a simple strip test. Test strips were dipped in samples, and color development on the strip was compared to standards and color charts to estimate nitrate and nitrite concentrations.

Atrazine: Results showed 18 samples tested positive for atrazine or other triazines. Of those, 10 tested positive at trace levels, between 0.07 and 0.09 µg/L (micrograms per liter, equivalent to parts-per-billion, or ppb). Samples from 7 wells had triazine levels between 0.1 and 0.6 µg/L. The highest concentration found during the 2006 screening was a sample with a level of 0.7 µg/L. A Maximum Contaminant Level (MCL) is the highest level of a contaminant that is allowed in a public water supply. MCLs are enforceable standards for public water supplies. The MCL for atrazine in drinking water is 3 µg/L.

Nitrite (NO_2): Only 13 wells tested positive for nitrite, at a detection limit of 0.15 mg/L Nitrite-N, (milligrams/liter nitrite as nitrogen, equivalent to parts-per-million or ppm). Twelve of those wells had a level of 0.15 mg/L. The other well had a level of 0.3 mg/L, still below the nitrite MCL of 1 mg/L nitrite-N. Two of these thirteen samples had high nit*rate* levels, equal to 10 mg/L nitrate-N or higher. Another three of the nitrite detections had nitrate concentrations of 5 mg/L, which is above background levels for nitrate.

Nitrate (NO_3): Nitrate results are summarized in the table below. The nitrate MCL is 10 mg/L nitrate-N.

Table 1. Nitrate results for the Ag Expo 2006 MDA domestic well screening.

Ag Expo 2006 Well Screening Results for Nitrate							
	Nitrate-N Levels in ppm (parts-per-million, equivalent to mg/L)						
	Not Tested	≤1	≥2 and<5	≥5 and<10	≥10 and ≤20	>20	**Total Samples**
Total and Percent of Total by Nitrate-N Level	2 0.1%	1175 73.4%	234 14.6%	138 8.6%	48 3.0%	3 0.2%	1600 100%

Results letters were mailed to all participants. Recommendations for further action were included in the letters for participants with triazine detections, or with elevated nitrate or nitrite detections. Free resamples were offered to all participants with a triazine detection.